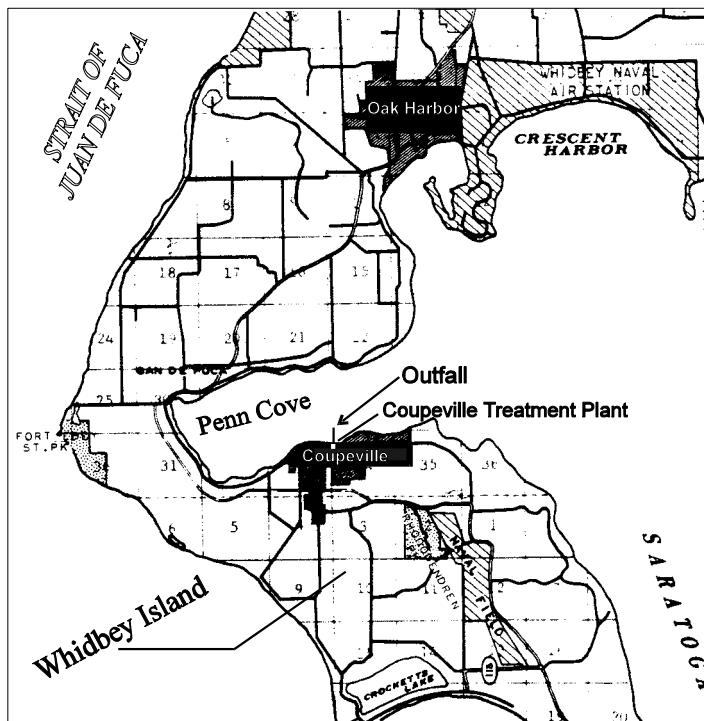


FACT SHEET FOR NPDES PERMIT WA-002937-8

COUPEVILLE WASTEWATER TREATMENT PLANT



SUMMARY

This fact sheet is a companion document to the draft National Pollutant Discharge Elimination System (NPDES) Permit for the Coupeville Wastewater Treatment Plant (WWTP). The fact sheet explains the nature of the proposed discharge, the Department of Ecology's (the Department's) decisions on limiting the pollutants in the wastewater, and the regulatory and technical basis for those decisions. The fact sheet and draft permit are available for review (see Appendix A--Public Involvement for more detail on the Public Notice procedures). This proposed permit includes effluent limits very similar to those in the previous permit.

GENERAL INFORMATION	
Applicant	Town of Coupeville P.O. Box 725 Coupeville, WA 98239
Facility Name and Address	Coupeville Wastewater Treatment Plant 600 NE 9th St. Coupeville, WA Phone (360) 678-6695
Responsible Official	Nancy Conard, Mayor Phone (360) 678-4461
Type of Treatment	Oxidation Ditch (Activated Sludge - Secondary Treatment)
Discharge Location	Penn Cove, Class A Marine Water Body ID No.: WA-06-0020 Latitude: 48° 13' 18" N Longitude: 122° 40' 37" W
Plant Contact	Katharine Bottenberg, Operator (360) 678-6695

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has authorized the State of Washington to administer the NPDES permit program. Chapter 90.48 RCW defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see *Appendix A--Public Involvement* of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

The Coupeville WWTP is an oxidation ditch, activated sludge system that serves approximately 1,600 people, and currently processes an average annual flow of approximately 0.18 MGD. Prior to the Phase I expansion that took place in 2002, the maximum month design flow was 0.25 MGD. The Phase I expansion increased the plant's approved maximum month design flow to 0.44 MGD. The Phase II portion of the expansion will not impact hydraulic capacity. Industrial users include the county jail, a hospital, school, and restaurants. Treatment consists of coarse screening, biological treatment in an aerated oxidation ditch, clarification in two clarifiers, chlorinated disinfection, and dechlorination prior to discharge to Penn Cove via a 1,450 foot 12 inch diameter pipe. Penn Cove is a class A marine waterbody.

TREATMENT PROCESSES

A schematic of the existing & proposed plant processes is shown in Appendix E. Influent passes through a coarse screen before entering a 225,000 gallon oxidation ditch for biological treatment. Mixed liquor is then separated in two, 35 ft diameter secondary clarifiers. Settled solids are recirculated to the oxidation ditch to maintain a high mixed liquor solids concentration. The clarified liquid flows by gravity into a chlorine contact tank for disinfection. Chlorinated effluent is chemically dechlorinated with sodium bisulfite and discharged to Penn Cove through a 1,450 ft 12-inch diameter outfall pipe. The last 60 feet of the outfall serves as a diffuser, with six 3-inch diameter orifices. The orifices discharge at approximately 20 feet below MLLW.

The Phase II expansion of the Coupeville facility is scheduled for summer 2004. This expansion will include the construction of a second 225,000 gallon oxidation ditch, and replacement of the chlorine disinfection system with an ultraviolet system.

TREATMENT PLANT EXPANSION

The Coupeville WWTP is currently operating at or slightly above design organic and solids loadings during winter months, and is in need of expansion. The Town of Coupeville has prepared a facility plan for this expansion, has completed Phase I, and is currently planning Phase II for the summer of 2004. Because the Permittee is making satisfactory progress towards expanding the treatment facility, and because effluent violations related to high loadings are not occurring, this permit will not include a time schedule for plant expansion completion. If progress slows to an unsatisfactory level, the Department may, prior to the expiration date of this permit, issue an administrative order establishing a time schedule for the expansion.

HISTORY

The following historical summary is taken from the Coupeville 1999 Comprehensive Sewer Plan and the 1999 Facility Plan:

"The sewer collection system was first constructed in 1935 as a combined storm and sanitary sewer system. The system was financed by the Works Progress Administration. The system was converted to a sanitary system in 1959 and extended to include Prairie Center...

The first wastewater treatment facility provided a primary level of treatment prior to discharge of the effluent to Penn Cove. The treatment facility was constructed in 1959 to serve a population of 1,500" ... "and included an influent structure, a flow recorder, a 46,000 gallon spirogester tank providing primary treatment and sludge storage, a chlorination system, a 2,000 gallon chlorine contact tank, an outfall, and a small utility building.

In 1982, secondary treatment was added to the facility by adding a 225,000 gallon oxidation ditch with brush rotor aerators and a 35-foot diameter clarifier. The same upgrade converted the spirogester tank into an aerobic digester and added a new headworks with a coarse mechanical screen, sludge drying beds, an 8,000 gallon chlorine contact tank, and effluent pumps.

Since the 1982 expansion a few structural and operational changes have occurred. These changes include the decommissioning of the sludge drying beds, the addition of an 8-inch influent bypass line, a sodium metabisulfite dechlorination system, and a new Parshall Flume for influent flow recording."

COLLECTION SYSTEM STATUS

The Coupeville sewage collection system is considerably older than the present treatment plant and has been known to have infiltration & inflow (I/I) problems for some time. The Town has aggressively worked on identification and removal of excessive I/I in their system, and is continuing to do so.

DISCHARGE OUTFALL

Secondary treated effluent is discharged to Penn Cove through a 1,450 ft 12-inch diameter outfall pipe. The last 60 feet of the outfall serves as a diffuser, with six 3-inch diameter orifices. The orifices discharge at approximately 20 feet below MLLW.

RESIDUAL SOLIDS

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), and at the final clarifier, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at the local landfill.

Waste biosolids are stabilized in a 175 m³ (46,000 gal) aerobic digester. Stabilized biosolids are trucked to the Island County septage facility south of Coupeville where additional treatment and stabilization is effected. The final treated product is land-applied on agricultural land permitted by the Island County Health Department.

PERMIT STATUS

The previous permit for this facility was issued on May 22, 2000. The previous permit placed effluent limitations on 5-day Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS), pH, Fecal Coliform bacteria, and Total Residual Chlorine.

An application for permit renewal was submitted to the Department on December 23, 2003 and accepted by the Department on January 29, 2004.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The Coupeville treatment facility received its last inspection on January 23, 2004. This was a class I compliance inspection without sampling.

The Town of Coupeville submits monthly discharge monitoring reports (DMR's) with data showing the quality of their effluent. A ten-year summary of these data from February, 1994 to November, 2003 is shown in Appendix E of this fact sheet.

The previous permit established final limitations for chlorine concentration. Dechlorination equipment was installed and functional by April of 1996, and since then the plant has routinely complied with the limitations.

Since the effective date of the previous permit (June 1, 2000), there have been no fecal coliform or TSS violations, two months of BOD exceedances, and four chlorine exceedances.

There have been many influent warnings when flow, BOD, and/or TSS loadings exceeded 85% of design capacity. The approved maximum monthly average design flow for the Coupeville plant was 250,000 gpd before the Phase I expansion, and design monthly average BOD and TSS loadings were 400 ppd each. During the previous permit period, monthly average flows exceeded 85% of the design value on five occasions. TSS and BOD loadings exceeded 85% of the design value nine and twenty-six times, respectively. These exceedances have demonstrated the need for the Town of Coupeville to expand their wastewater treatment plant to accommodate the higher flows. The Town has recently completed phase I of a two phase expansion project. Phase II is scheduled to begin in 2004. In addition to expanding the plant, the Town has also pursued an aggressive program of finding and eliminating excessive I/I flows in their sewer collection system.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the NPDES application and in discharge monitoring reports (DMRs). A full tabulation of the reported DMR data for a 10-year period is shown in Appendix F, and is characterized in Table 1.

Table 1. Wastewater Characterization

Parameter	Concentration
Monthly Average Flow	0.18 mgd
Maximum Month Avg. Flow	0.35 mgd
Monthly Average BOD	10 mg/L
Monthly Average TSS	7 mg/L
Avg. BOD % Removal	95%
Avg. TSS % Removal	96%
Fecal Coliform, Mo. Geometric Mean	11
Chlorine Residual, Mo. Avg. (since dechlor)	0.04 mg/L
Ammonia, Mo. Avg. NH ₃ -N	7 mg/L

PROPOSED PERMIT LIMITATIONS

Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may

be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria. The design criteria for this treatment facility, taken from the Phase II Expansion Specifications dated September 17, 2002, are as shown in Table 2.

Table 2. Design Standards for Coupeville WWTP

Parameter	Pre-Expansion	Phase I	Phase II
Monthly average flow (max. month)	0.250 mgd	0.440 mgd	0.440 mgd
Instantaneous peak flow	1.0 mgd	1.56 mgd	1.56 mgd
BOD ₅ influent loading (max. month)	400 lb/day	445 lb/day	648 lb/day
TSS influent loading (max. month)	400 lb/day	360 lb/day	488 lb/day
Design BOD ₅ removal	85%	85%	85%
Design SS removal	85%	85%	85%

Phase I expansion of the Coupeville WWTP has been completed and Phase II is scheduled to begin in summer 2004. Phase II construction will be considered complete when the consultant has signed and submitted to the Department a construction completion form, and the Department has accepted this form with an acceptance letter to the permittee. After the completion of Phase II construction, flows or waste loadings of the design criteria specified in Table 2 shall not be exceeded.

In addition to meeting design criteria, the Permittee must meet pollutant limits in its discharge. Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations are set by regulations in 40 CFR 133, Chapter 173-220 WAC and Chapter 173-221 WAC. Water quality-based limitations are based upon compliance with the Water Quality Standards (Chapter 173-201A WAC). The more stringent of these two limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known

available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The technology-based mass limits shown in Table 3 are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

Table 3. Technology-based Limits

Parameter	Limit
pH:	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD ₅ (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
BOD ₅ (mass)	Ave. Monthly Limit = 110 lb/day Ave. Weekly Limit = 165 lb/day
TSS (mass)	Ave. Monthly Limit = 110 lb/day Ave. Weekly Limit = 165 lb/day
Chlorine Residual ¹ (concentration)	Ave. Monthly Limit = 0.20 mg/L Max. Daily Limit = 0.43 mg/L

¹ The existing permit has a monthly average chlorine limit of 0.20 mg/L and the facility is able to comply with it. The proposed permit includes the same limit.

The monthly effluent mass loading (lb/day) is determined from the following calculation:

$$\text{Mass limit (lb/day)} = \text{the maximum monthly design flow (MGD)} \times \text{Conc. limit (mg/L)} \times 8.34 \text{ (8.34 is a conversion factor)}$$

The weekly average effluent mass loading is calculated as 1.5 x monthly loading (110 lbs/day) = 165 lbs/day.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the State of Washington.

ANTIDEGRADATION

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when receiving waters are of higher quality than the criteria assigned, the existing water quality shall be protected. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

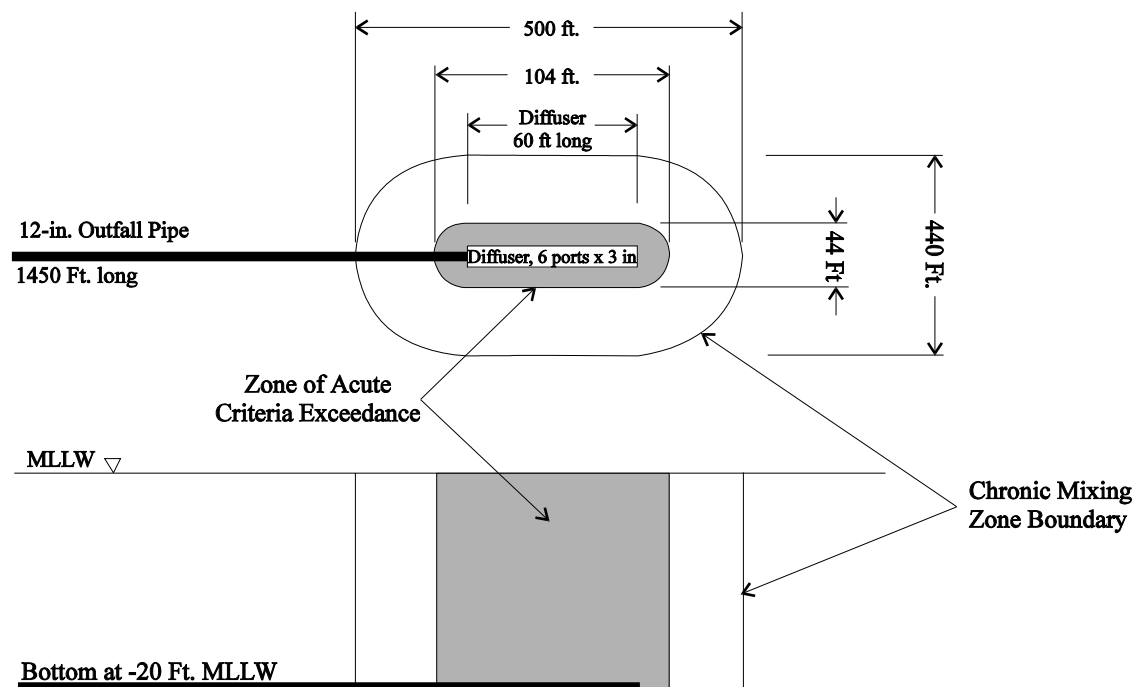
Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

MIXING ZONES

The Water Quality Standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

Per WAC 173-201A-100(7)(b) the mixing zone for an estuary "shall not extend in any horizontal direction from the discharge ports for a distance greater than 200 feet plus the depth of water over the discharge ports as measured during mean lower low water. In addition, WAC 173-201A-100(8)(b) states that "a zone where acute criteria may be exceeded shall not extend beyond ten percent of the distance established in subsection (7)(b) of this section as measured independently from the discharge ports."

Using the WAC criteria, the mixing zone for the Coupeville discharge extends 220 feet (67 m) in each horizontal direction and to the water surface in the vertical direction. The acute criteria zone is 10 percent of 220, or 22 feet (6.7 m) horizontally and to the surface vertically. Based on these criteria, the mixing zones are shown graphically in Figure 1.



COUPEVILLE OUTFALL DILUTION ZONES
Figure 1. Mixing Zone for Coupeville WWTP.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria. Once a mixing zone was established, a hydraulic model was used to estimate the degree of effluent dilution that could be expected in the mixing zone under the worst-case or "critical" condition. The hydraulic model used for this discharge was the EPA UM3 model, accessed through the PLUMES interface. This model is capable of estimating dilutions achieved by multi-port diffusers.

As part of the Town's facility planning process prior to the recent phase I upgrades, Coupeville's consulting engineers, KCM Inc., conducted numerous computer runs on the outfall to determine the worst case dilution conditions. For this new permit cycle, additional modeling was performed by Ecology to re-analyze the mixing performance with the increased design flow rates. The two critical computer runs are shown for chronic and acute dilution in Appendix C.

The critical condition resulted in a dilution of 36:1 in the zone of acute criteria exceedance and 58:1 in the zone of chronic exceedance. However, to prevent backsliding, it is proposed that the more conservative dilution factors used during the previous permit cycle be used for this permit cycle. These dilution factors are 30:1 for the acute zone and 50:1 for the chronic zone.

DESCRIPTION OF THE RECEIVING WATER

The Coupeville WWTP discharges to Penn Cove, which is designated as a Class A receiving water in the vicinity of the outfall. Another nearby point source outfall includes Penn Cove, a 0.06 MGD municipal wastewater treatment plant. Characteristic uses include the following:

water supply (domestic, industrial, agricultural); stock watering; fish migration; fish and shellfish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized in Table 4.

Table 4. Water Quality Criteria for Class A Marine Waters

Parameter	Class A WQ Criteria
Fecal Coliforms	14 organisms/100 mL maximum geometric mean
Dissolved Oxygen	6 mg/L minimum
Temperature	16 degrees Celsius (61°F) maximum or incremental increases above background
pH	7.0 to 8.5 standard units
Turbidity	Turbidity shall not exceed 5 NTU over background turbidity when the background is 50 NTU or less, or have more than a 10% increase when background turbidity is above 50 NTU
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

BOD₅--This discharge with technology-based limitations results in a small amount of BOD loading relative to the large amount of dilution occurring in the receiving water at critical conditions. The effluent plume reaches the boundary of the chronic dilution zone within about 30 minutes. Very little of the permitted 30 mg/L BOD will exert in such a short time. This, plus the 50:1 dilution, will result in an expected oxygen drop of less than 0.1 mg/L in the adjacent receiving waters. Thus, technology-based limitations will be protective of dissolved oxygen criteria in the receiving water.

Temperature--The Permittee reports an effluent temperature of 66°F during the summer months. Assuming a receiving water temperature of 61°F and a dilution of 50:1, it is estimated that the discharge will cause a temperature increase of 0.1°F at the chronic dilution boundary. Thus, there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, no effluent limitation for temperature was placed in the proposed permit.

pH--Because of the high buffering capacity of marine water, compliance with the technology-based limits of 6 to 9 will assure compliance with the Water Quality Standards for Surface Waters.

Fecal coliform--The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 50:1. Under critical conditions, this should result in an increase of no more than 8 organisms/100 mL at the boundary of the chronic dilution zone. Since there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The following toxics were determined to be present in the discharge: chlorine and ammonia. An effluent limit has been set for chlorine. For ammonia, a reasonable potential analysis was

conducted (Appendix H) to determine if an effluent limit would be required in this permit. Weekly monitoring of ammonia was required in the permit period proceeding the current permit period because the "reasonable potential" analysis triggered some concern for this toxicant at that time. At the writing of the existing permit, a reasonable potential analysis indicated that a permit limit was not needed for ammonia, however monitoring continued on a monthly basis.

The reasonable potential for ammonia to exceed the water quality criteria was evaluated with the more recent data, using procedures given in EPA, 1991 at the critical condition. The parameters used in the critical condition modeling are as follows: acute dilution factor 30:1, chronic dilution factor 50:1, receiving water temperature 14°C, receiving water alkalinity 15.9 (as mg CaCO₃/L). No valid ambient background data was available for ammonia. A determination of reasonable potential using zero for background ammonia resulted in no reasonable potential for ammonia toxicity. Five years of monthly ammonia samples show that ammonia concentrations significantly decreased in October 2001. Since this is prior to the completion of phase I construction, it is unclear as to why this decrease occurred. This raises the concern that a sampling artifact may be responsible for this apparent decrease. For this reason, quarterly monitoring in January, April, July, and October is proposed for the next permit cycle.

WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing.

Toxicity caused by unidentified pollutants is not expected in the effluent from this discharge as determined by the screening criteria given in Chapter 173-205 WAC. Therefore, no whole effluent toxicity testing is required in this permit. The Department may require effluent toxicity testing in the future if it receives information that toxicity may be present in this effluent.

HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the applicant's discharge is unlikely to contain chemicals of concern based on existing data or knowledge. The discharge will be re-evaluated for impacts to human health at the next permit reissuance.

SEDIMENT QUALITY

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

This Permittee has no discharge to ground and therefore no limitations are required based on potential effects to ground water.

COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING PERMIT

Table 5 summarizes the changes in effluent limits from the previous permit. The proposed effluent limits are based on the approved maximum month design loading criteria for the facility as demonstrated in the Plans & Specifications dated September 2002.

Table 5. Comparison of Effluent Limits with the Existing Permit Issued May 22, 2000

Parameter	Existing Limits	Proposed Limits
BOD		
Month Avg, mg/L	30	30
Month Avg., ppd	63	110
Weekly Avg, mg/L	45	45
Weekly Avg, ppd	94	165
TSS		
Month Avg, mg/L	30	30
Month Avg., ppd	63	110
Weekly Avg, mg/L	45	45
Weekly Avg, ppd	94	165
Fecal Coliform		
Monthly Avg.	200/100 ml	200/100 ml
Weekly Avg.	400/100 ml	400/100 ml
pH, allowable range	6.0 - 9.0 Std Units	6.0 - 9.0 Std Units
Total Residual Chlorine ^a		
Monthly Avg, mg/L	0.20	0.20
Monthly Avg, ppd	0.42	0.42
Daily Maximum, mg/L	0.43	0.43

^a Installation of an ultraviolet disinfection system is scheduled for late 2004. After UV installation, chlorination equipment will remain available for emergency backup. The effluent limitations for chlorine are in effect only at such times as chlorine is added to the wastewater for disinfection.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (July 2002) for activated sludge plants with < 2.0 MGD average design flow.

A summary of the required monitoring is shown in Table 6.

Table 6. Required Effluent Monitoring

Test	Sample Point	Frequency	Sample Type
Flow	Final Effluent	Continuous	Measurement
pH	Final Effluent	Daily	Grab
BOD ₅	Influent	2 / week	24-hr. Composite
	Final Effluent	2 / week	24-hr. Composite
TSS	Influent	2 / week	24-hr. Composite
	Final Effluent	2 / week	24-hr. Composite
Total Residual Cl ₂ ^a	Final Effluent	Daily	Grab
Fecal Coliform	Final Effluent	2 / week	Grab

^a Installation of an ultraviolet disinfection system is scheduled for late 2004. After UV installation, chlorination equipment will remain available for emergency backup. The above effluent limitations for chlorine are in effect only at such times as chlorine is added to the wastewater for disinfection.

ADDITIONAL EFFLUENT MONITORING

Federal procedures require the submission of additional data with the permit application. Specifically, treatment works with a design flow greater than 0.1 MGD are required to submit at least three sets of effluent data collected during the term of the permit and spaced at least four months apart. For Coupeville, this additional monitoring will include testing for:

- Total Residual Chlorine
- Dissolved Oxygen
- Total Kjeldahl Nitrogen
- Nitrate + Nitrite Nitrogen
- Oil & Grease
- Total Phosphorus
- Total Dissolved Solids

LAB ACCREDITATION

With the exception of certain parameters, the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. The laboratory at this facility is accredited for BOD/CBOD, chlorine (residual), DO, pH, TSS, and fecal coliform. The LAN (lab accreditation number) is M069.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in proposed permit requirement S.4. to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4. restricts the amount of flow.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in permit condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under Chapter 70.95J RCW and Chapter 173-308 WAC. The disposal of other solid waste is under the jurisdiction of the Island County Health Department.

PRETREATMENT

FEDERAL AND STATE PRETREATMENT PROGRAM REQUIREMENTS

Under the terms of the addendum to the “Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10” (1986), the Department of Ecology (Department) has been delegated authority to administer the Pretreatment Program (i.e. act as the Approval Authority for oversight of delegated Publicly Owned Treatment Works (POTWs)). Under this delegation of authority, the Department has exercised the option of issuing wastewater discharge permits for significant industrial users discharging to POTWs which have not been delegated authority to issue wastewater discharge permits.

There are a number of functions required by the Pretreatment Program which the Department is delegating to such POTWs because they are in a better position to implement the requirements (e.g. tracking the number and general nature of industrial dischargers to the sewerage system). The requirements for a Pretreatment Program are contained in Title 40, part 403 of the Code of Federal Regulations. Under the requirements of the Pretreatment Program (40 CFR 403.8(f)(1)(iii)), the Department is required to approve, condition, or deny new discharges or a significant increase in the discharge for existing significant industrial users (SIUs) (40 CFR 403.8 (f)(1)(i)).

The Department is responsible for issuing State Waste Discharge Permits to SIUs and other industrial users of the Permittee's sewer system. Industrial dischargers must obtain these permits from the Department prior to the Permittee accepting the discharge (WAC 173-216-110(5)) (Industries discharging wastewater that is similar in character to domestic wastewater are not required to obtain a permit. Such dischargers should contact the Department to determine if a permit is required.). Industrial dischargers need to apply for a State Waste Discharge Permit sixty days prior to commencing discharge. The conditions contained in the permits will include any applicable conditions for categorical discharges, loading limitations included in contracts with the POTW, and other conditions necessary to assure compliance with State water quality standards and biosolids standards.

The Department requires this POTW to fulfill some of the functions required for the Pretreatment Program in the NPDES permit (e.g. tracking the number and general nature of industrial dischargers to the sewage system). The POTW's NPDES permit will require that all SIUs currently discharging to the POTW be identified and notified of the requirement to apply for a wastewater discharge permit from the Department. None of the obligations imposed on the POTW relieve an industrial or commercial discharger of its primary responsibility for obtaining a wastewater discharge permit (if required), including submittal of engineering reports prior to construction or modification of facilities (40 CFR 403.12(j) and WAC 173-216-070 and WAC 173-240-110, et seq.).

WASTEWATER PERMIT REQUIRED

RCW 90.48 and WAC 173-216-040 require SIUs to obtain a permit prior to discharge of industrial waste to the Permittee's sewerage system. This provision prohibits the POTW from accepting industrial wastewater from any such dischargers without authorization from the Department.

REQUIREMENTS FOR ROUTINE IDENTIFICATION AND REPORTING OF INDUSTRIAL USERS

The NPDES permit requires non-delegated POTWs to "take continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs) discharging to the Permittee's sewerage system". Examples of such routine measures include regular review of business tax licenses for existing businesses and review of water billing records and existing connection authorization records. System maintenance personnel can also be diligent during performance of their jobs in identifying and reporting as-yet unidentified industrial dischargers. Local newspapers, telephone directories, and word-of-mouth can also be important sources of information regarding new or existing discharges. The POTW is required to notify an industrial discharger, in writing, of their responsibilities regarding application for a

State waste discharge permit and to send a copy of the written notification to the Department. The Department will then take steps to solicit a State waste discharge permit application.

DUTY TO ENFORCE DISCHARGE PROHIBITIONS

This provision prohibits the POTW from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer. The first portion of the provision prohibits acceptance of pollutants which cause pass through or interference. The definitions of pass through and interference are in Appendix B of the fact sheet..

The second portion of this provision prohibits the POTW from accepting certain specific types of wastes, namely those which are explosive, flammable, excessively acidic, basic, otherwise corrosive, or obstructive to the system. In addition wastes with excessive BOD, petroleum based oils, or which result in toxic gases are prohibited to be discharged. The regulatory basis for these prohibitions is 40 CFR Part 403, with the exception of the pH provisions which are based on WAC 173-216-060.

The third portion of this provision prohibits certain types of discharges unless the POTW receives prior authorization from the Department. The discharges include cooling water in significant volumes, stormwater and other direct inflow sources, and wastewaters significantly affecting system hydraulic loading, which do not require treatment.

SUPPORT BY THE DEPARTMENT FOR DEVELOPING PARTIAL PRETREATMENT PROGRAM BY POTW

The Department has committed to providing technical and legal assistance to the Permittee in fulfilling these joint obligations, in particular assistance with developing an adequate sewer use ordinance, notification procedures, enforcement guidelines, and developing local limits and inspection procedures.

OUTFALL EVALUATION

Proposed permit condition S.8 requires the Permittee to conduct an outfall inspection and submit a report detailing the findings of that inspection. The purpose of the inspection is to determine the condition of the discharge pipe and diffusers and to determine if sediment is accumulating in the vicinity of the outfall.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on

new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. The Department proposes that this permit be issued for 5 years.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.
1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.
1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.
1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.
1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Metcalf and Eddy.

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

Laws and Regulations(<http://www.ecy.wa.gov/laws-rules/index.html>)

Permit and Wastewater Related Information
(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Water Pollution Control Federation.

1976. Chlorination of Wastewater.

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(E2). (Cited in EPA 1985 op.cit.)

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to issue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on February 7th and 14th, 2004 in the Whidbey News Times to inform the public that an application had been submitted and to invite comment on the issuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on May 5, 2004, in the Whidbey News Times to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (425) 649-7201, or by writing to the address listed above.

This permit and fact sheet were written by Alison Evans, Facility Manager.

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART-- An acronym for “all known, available, and reasonable methods of prevention, control, and treatment”.

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

CBOD₅ – The quantity of oxygen utilized by a mixed population of microorganisms acting on the nutrients in the sample in an aerobic oxidation for five days at a controlled temperature of 20 degrees Celsius, with an inhibitory agent added to prevent the oxidation of nitrogen compounds. The method for determining CBOD₅ is given in 40 CFR Part 136.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring --Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued there under (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in State regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

Pass through -- A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

- a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;
- b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

- 1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;
- 2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at (<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

PLUMES DILUTION ZONE MODEL RUN – CHRONIC, AVERAGE MAX MONTH FLOW (FLOW = 0.44 MGD)

UM3. 4/23/2004 2:26:21 PM

Case 1; ambient file D:\MyDocuments\Facilities\Coupeville\Plumes\acuteDesignFlow.001.db;

Diffuser table record 1:00-----

Ambient Table:

Depth m	Amb-cur m/s	Amb-dir deg	Amb-sal psu	Amb-tem C	Amb-pol kg/kg	Decay s-1	Far-spd m/s	Far-dir deg	Disprsn m0.67/s2	Density sigma-T
0	0.03	90	15.9	14.01	0	0	0.03	90	0.0003	11.54
10.06	0.03	90	27.9	10.01	0	0	0.03	90	0.0003	21.45
25	0.03	90	27.9	10.01	0	0	0.03	90	0.0003	21.45

Diffuser table:

P-dia (m)	P-elev (m)	V-angle (deg)	H-angle (deg)	Ports ()	Spacing (m)	AcuteMZ (m)	ChrcMZ (m)	P-depth (m)	Ttl-flo (m3/s)	Eff-sal (psu)	Temp (C)	Polutnt (ppm)
0.0762	0.1524	0	90	6	3.658	6.71	67.1	6.096	0.01929	0	18.33	100

Simulation:

Froude number: 5.922; effluent density (sigma-T) -1.40269292; effluent velocity 0.705(m/s);

Step	Depth (m)	Amb-cur (m/s)	P-dia (m)	Polutnt (ppm)	P-speed (m/s)	Dilutn ()	CL-diln ()	x-posn (m)	y-posn (m)	Time (s)	
0	6.096	0.03	0.0762	100	0.705	1	1	0	0	0.0;	
100	5.806	0.03	0.381	15.82	0.174	6.224	3.011	0	0.862	3.794;	
167	4.454	0.03	0.962	4.268	0.1	23.03	10.9	0	1.923	16.67;	trap level;
189	4.043	0.03	1.369	3.1	0.0684	31.7	13.75	0	2.277	23.19;	begin overlap;
200	3.967	0.03	1.496	2.919	0.061	33.67	13.95	0	2.373	25.11;	
262	3.846	0.03	1.741	2.737	0.0485	35.91	13.95	0	2.712	32.04;	local max rise or fall;

Plumes not "merged," Brooks method may be overly conservative.

--- 4/3 Power Law ---			--- Const Eddy Diffusivity ---			Farfield dispersion based on wastefield width of 20.03 m					
conc (ppm)	dilutn	width (m)	conc (ppm)	dilutn	width (m)	distnce (m)	time (hrs)	(ppm)	(s-1)	(m/s)	(m0.67/s2)
2.73529	35.94	21.35	2.7352	35.94	21.29	6.71	0.037	0	0	0.03	3.00E-04
2.72205	36.12	23.62	2.72804	36.04	23.26	13.42	0.0991	0	0	0.03	3.00E-04
2.6408	37.25	25.97	2.67935	36.7	25.07	20.13	0.161	0	0	0.03	3.00E-04
2.50919	39.23	28.39	2.6006	37.83	26.76	26.84	0.223	0	0	0.03	3.00E-04
2.3598	41.76	30.88	2.51128	39.2	28.35	33.55	0.286	0	0	0.03	3.00E-04
2.21048	44.62	33.44	2.42136	40.68	29.86	40.26	0.348	0	0	0.03	3.00E-04
2.0687	47.72	36.07	2.33537	42.2	31.29	46.97	0.41	0	0	0.03	3.00E-04
1.93722	51	38.76	2.25487	43.73	32.66	53.68	0.472	0	0	0.03	3.00E-04
1.81684	54.42	41.52	2.18056	45.24	33.98	60.39	0.534	0	0	0.03	3.00E-04
1.70681	57.97	44.34	2.11177	46.73	35.24	67.1	0.596	0	0	0.03	3.00E-04

count: 10;

2:26:22 PM. AMB FILLS: 2

**APPENDIX C (CONTINUED) - PLUMES DILUTION ZONE MODEL RUN –
ACUTE, DESIGN PEAK MONTH FLOW (FLOW = 1.56 MGD)**

UM3. 4/23/2004 2:35:19 PM

Case 1; ambient file D:\My Documents\Facilities\Coupeville\Plumes\newPermit\acuteDesignFlow.001.db;

Diffuser table record 1:00 ----

Ambient Table:

Depth m	Amb-cur m/s	Amb-dir deg	Amb-sal psu	Amb-tem C	Amb-pol kg/kg	Decay s-1	Far-spdx m/s	Far-dir deg	Disprsn m0.67/s2	Density sigma-T
0	0.03	90	15.9	14.01	0	0	0.03	90	0.0003	11.54
10.06	0.03	90	27.9	10.01	0	0	0.03	90	0.0003	21.45
25	0.03	90	27.9	10.01	0	0	0.03	90	0.0003	21.45

Diffuser table:

P-dia (m)	P-elev (m)	V-angle (deg)	H-angle (deg)	Ports ()	Spacing (m)	AcuteMZ (m)	ChrnCMZ (m)	P-depth (m)	Ttl-flo (m3/s)	Eff-sal (psu)	Temp (C)	Polutnt (ppm)
0.0762	0.1524	0	90	6	3.658	6.71	67.1	6.096	0.06839	0	18.33	100

Simulation:

Froude number: 20.99; effluent density (sigma-T) -1.40269292; effluent velocity 2.499(m/s);

Step (m)	Depth (m/s)	Amb-cur (m)	P-dia (ppm)	Polutnt (m/s)	P-speed ()	Dilutn ()	CL-diln (m)	x-posn (m)	y-posn (s)	Time	
0	6.096	0.03	0.0762	100	2.499	1	1	0	0	0.0;	
77	6.082	0.03	0.337	21.77	0.568	4.527	2.288	0	0.662	0.728;	bottom hit;
100	6.041	0.03	0.522	13.8	0.374	7.128	3.552	0	1.142	1.808;	
164	4.863	0.03	1.569	3.887	0.146	25.28	11.96	0	3.988	17.1;	trap level;
195	4.327	0.03	2.181	2.875	0.104	34.17	15.22	0	5.169	27.73;	begin overlap;
200	4.307	0.03	2.227	2.824	0.101	34.79	15.41	0	5.269	28.73;	
218	4.279	0.03	2.334	2.702	0.0967	36.37	15.93	0	5.597	32.07;	local max rise or fall;

Plumes not "merged," Brooks method may be overly conservative.

--- 4/3 Power Law ---

--- Const Eddy Diffusivity ---

Farfield dispersion based on wastefield width of 20.62 m

conc (ppm)	dilutn	width (m)	conc (m)	dilutn (ppm)	width (m)	distnce (m)	time (hrs)	(ppm)	(s-1)	(m/s)	(m0.67/s2)
2.6966	36.44	20.99	2.69656	36.44	20.99	6.71	0.0103	0	0	0.03	3.00E-04
2.69911	36.4	23.25	2.69988	36.39	23.06	13.42	0.0724	0	0	0.03	3.00E-04
2.65293	37.05	25.59	2.67247	36.77	24.95	20.13	0.135	0	0	0.03	3.00E-04
2.54453	38.66	28	2.60779	37.7	26.72	26.84	0.197	0	0	0.03	3.00E-04
2.40558	40.93	30.48	2.52463	38.97	28.37	33.55	0.259	0	0	0.03	3.00E-04
2.25964	43.61	33.03	2.43691	40.39	29.93	40.26	0.321	0	0	0.03	3.00E-04
2.11782	46.57	35.64	2.35132	41.88	31.42	46.97	0.383	0	0	0.03	3.00E-04
1.98492	49.74	38.33	2.27046	43.4	32.83	53.68	0.445	0	0	0.03	3.00E-04
1.86223	53.05	41.07	2.19505	44.91	34.19	60.39	0.507	0	0	0.03	3.00E-04
1.7497	56.51	43.88	2.1253	46.41	35.5	67.1	0.569	0	0	0.03	3.00E-04

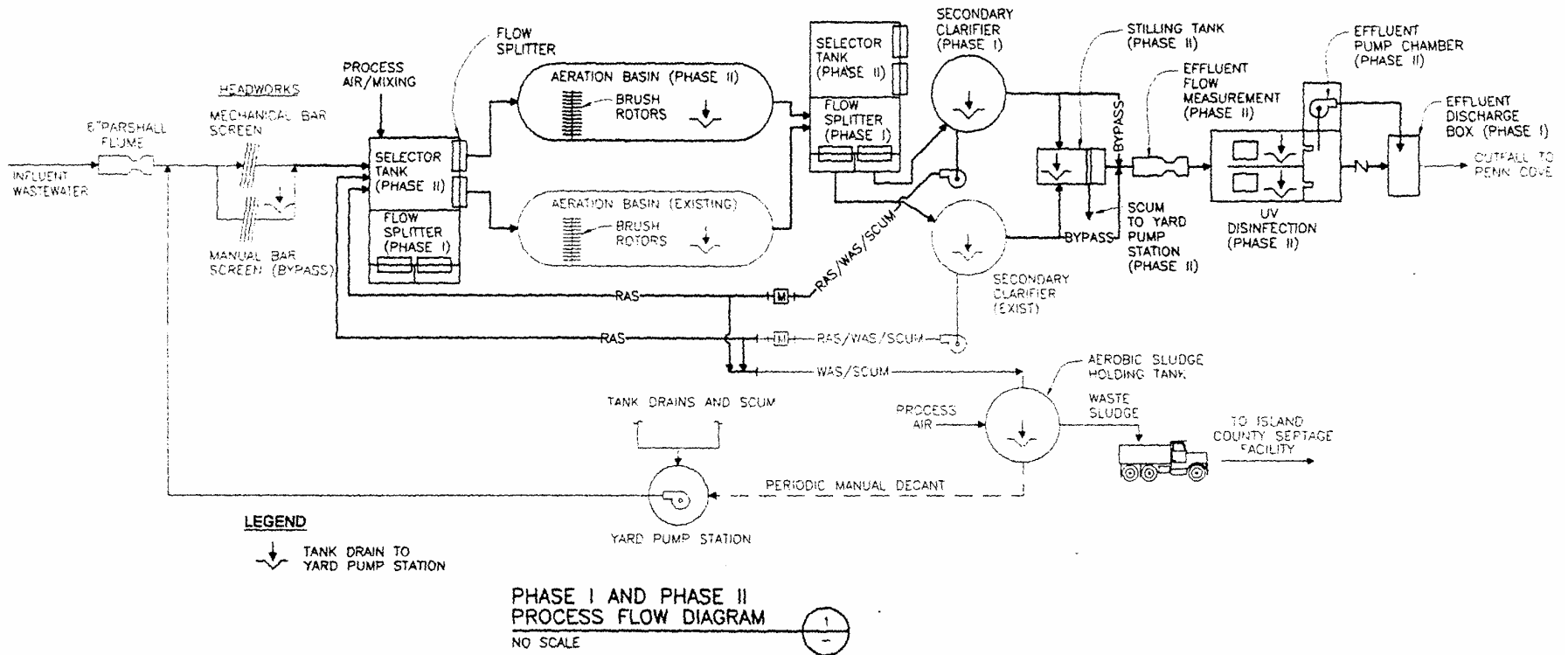
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2:35:19 PM. Amb fills: 2

APPENDIX D--RESPONSE TO COMMENTS

There were no comments during the public comment period.

APPENDIX E — LAYOUT DIAGRAM OF TREATMENT FACILITY

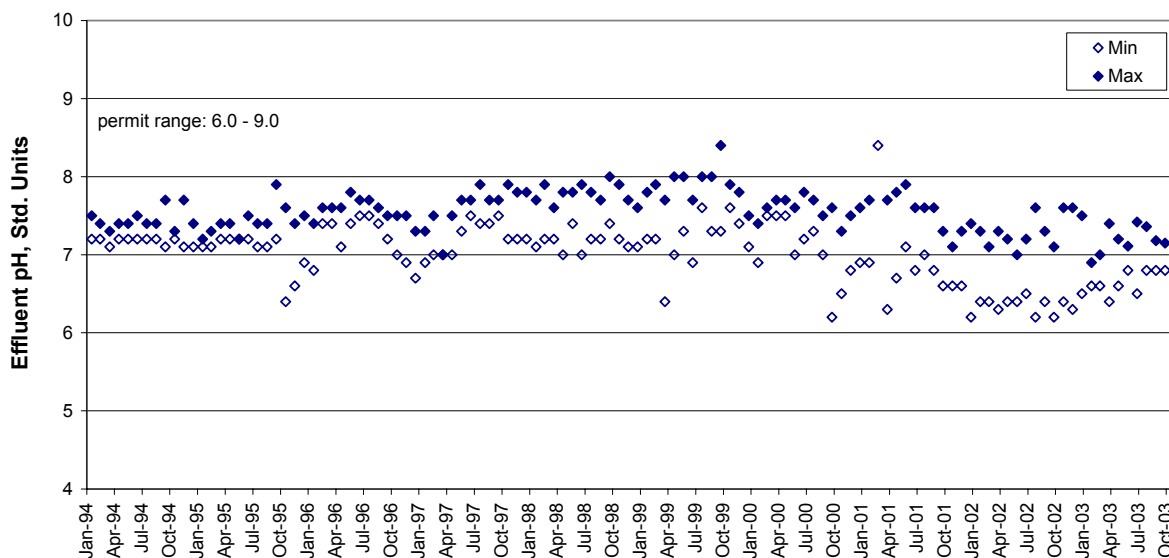
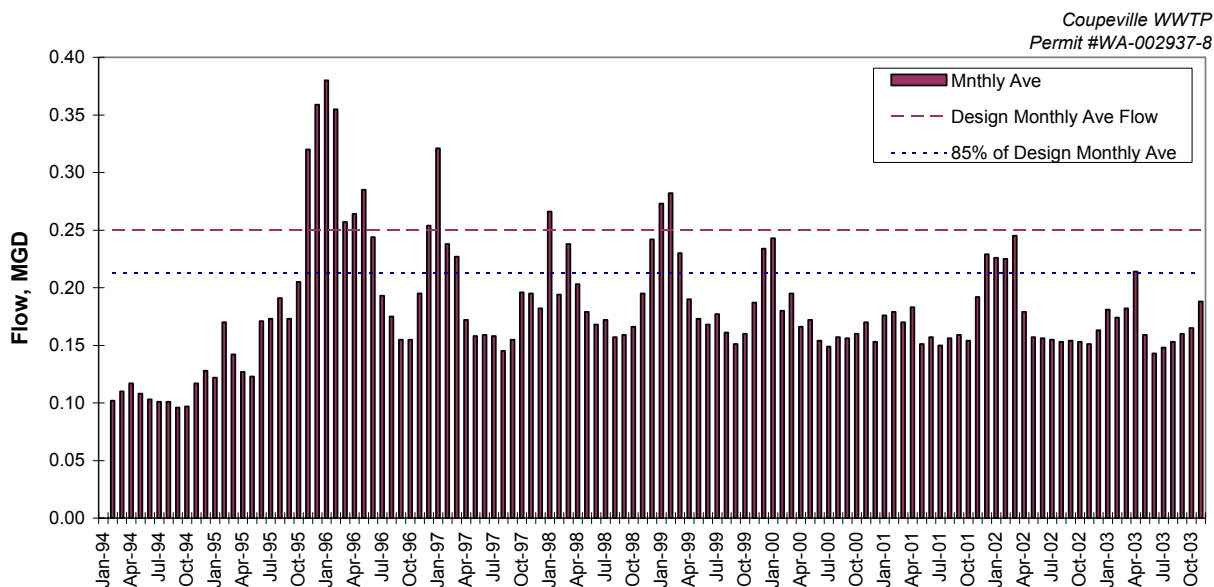


APPENDIX F — DISCHARGE MONITORING DATA. 1994 - 2003

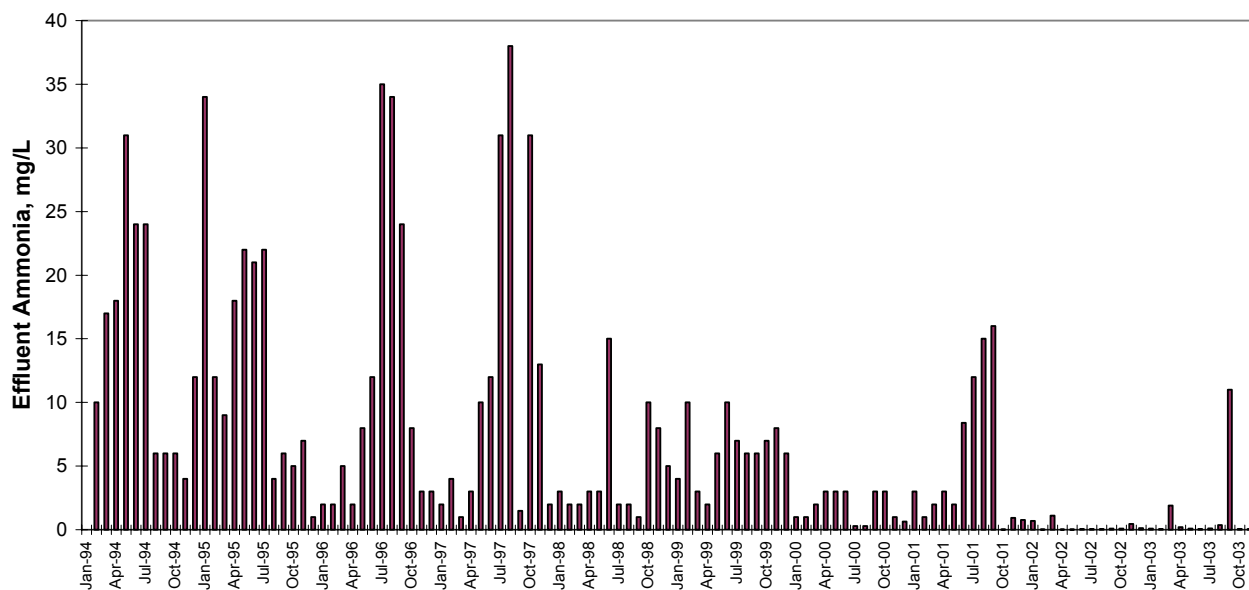
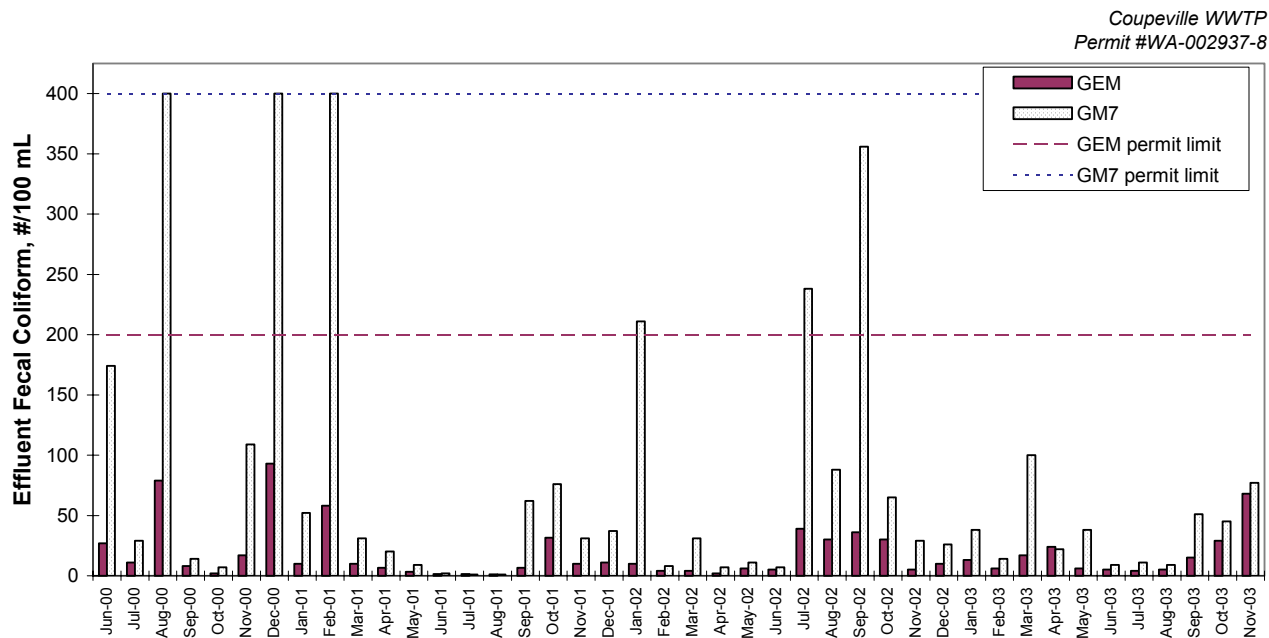
Facility: Coupeville WWTP
Permit No: WA-002937-8

Date	Influent												Effluent																				
	Flow, MGD			BOD, mg/L			SS, mg/L			TSS, mg/L			BOD, mg/L			SS, mg/L			TSS, mg/L			pH			Fecal Coliform, #/100 ml			Chlorine, mg/L			NH ₃ as N, mg/L		
	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	GEM	GM7	Min	Max	Min	Max	Min	Max		
	Flow, MGD	BOD, mg/L	SS, mg/L	TSS, mg/L	BOD, mg/L	SS, mg/L	TSS, mg/L	pH	Fecal Coliform, #/100 ml	Chlorine, mg/L	NH ₃ as N, mg/L	% Removal	% Removal	% Removal	% Removal	% Removal	% Removal	% Removal	% Removal	% Removal	% Removal	% Removal	% Removal	% Removal	% Removal	% Removal	% Removal	% Removal	% Removal	% Removal	% Removal		
1-Jan-96	0.38	0.29	104	140	293	386	146	168	413	464	7	9	23	25	92	7	7	19	21	95	6.9	7.5	9	23	1.00	1.40	2.00	2.00					
1-Feb-96	0.36	1.27	142	209	392	504	179	239	502	587	9	10	26	44	94	7	7	20	34	96	6.8	7.4	13	52	0.70	1.30	1.00	2.00					
1-Mar-96	0.26	0.30	349	357	166	180	501	589	239	292	8	10	18	20	95	6	7	13	14	97	7.4	7.6	5	9	0.68	1.50	2.00	5.00					
1-Apr-96	0.26	0.35	153	162	357	416	216	232	501	540	7	8	17	20	95	8	12	20	31	96	7.4	7.6	5	8	0.08	0.35	2.00	2.00					
1-May-96	0.29	0.47	145	179	360	432	204	219	513	626	5	6	13	16	96	6	8	15	19	97	7.1	7.6	7	17	0.02	0.07	3.00	8.00					
1-Jun-96	0.24	0.27									6	7	13	15	97	5	6	10	12	98	7.4	7.8	3	4	0.01	0.04	7.00	12.00					
1-Jul-96	0.19	0.28	315	389	204	237	392	559	246	267	10	12	16	17	95	7	12	11	17	97	7.5	7.7	19	46	0.01	0.03	20.00	35.00					
1-Aug-96	0.18	0.19	291	315	196	216	373	407	251	267	10	15	15	23	95	9	15	14	23	96	7.5	7.7	52	95	0.00	0.02	29.00	34.00					
1-Sep-96	0.16	0.26	229	244	177	206	329	417	248	343	5	6	7	11	97	7	8	10	17	97	7.4	7.6	3	9	0.00	0.03	20.00	24.00					
1-Oct-96	0.16	0.23	205	328	260	440	331	501	422	673	5	6	6	7	98	5	7	6	8	98	7.2	7.5	3	7	0.02	0.10	7.00	8.00					
1-Nov-96	0.20	0.50	128	157	199	261	205	264	321	438	6	8	10	15	95	6	8	9	15	97	7.0	7.5	2	3	0.02	0.05	2.00	3.00					
1-Dec-96	0.25	0.94	123	157	242	258	141	194	272	301	7	8	14	18	95	7	8	14	18	95	6.9	7.5	26	100	0.02	0.08	2.00	3.00					
1-Jan-97	0.32	0.94	103	140	236	257	134	235	299	404	10	13	25	44	90	12	20	31	67	91	6.7	7.3	58	201	0.10	1.30	1.00	2.00					
1-Feb-97	0.24	0.44	124	149	268	294	162	194	380	455	7	8	15	19	95	7	8	16	22	96	6.9	7.3	6	12	0.02	0.06	2.00	4.00					
1-Mar-97	0.23	0.33	136	138	258	288	163	181	315	383	5	7	10	15	96	6	8	12	17	96	7.0	7.5	2	4	0.03	0.12	1.00	1.00					
1-Apr-97	0.17	0.23	250	281	175	182	313	360	220	257	5	5	6	7	97	5	6	7	8	98	7.0	7.0	2	2	0.02	0.06	2.00	3.00					
1-May-97	0.16	0.18	239	282	179	209	347	367	258	265	7	8	9	11	96	8	9	11	12	97	7.0	7.5	3	6	0.02	0.05	5.00	10.00					
1-Jun-97	0.16	0.28	176	221	228	271	266	291	349	354	6	6	8	10	97	7	8	10	13	97	7.3	7.7	6	8	0.02	0.07	9.00	12.00					
1-Jul-97	0.16	0.28	192	204	261	339	226	270	303	342	5	6	7	8	97	10	12	14	15	95	7.5	7.7	27	45	0.03	0.10	28.00	31.00					
1-Aug-97	0.15	0.17	227	248	287	345	274	302	343	373	7	10	9	12	96	12	15	15	15	96	7.4	7.9	33	79	0.03	0.08	32.00	38.00					
1-Sep-97	0.16	0.20	177	237	236	300	241	291	323	371	6	6	8	8	96	9	12	12	15	95	7.4	7.7	11	19	0.02	0.09	1.00	1.50					
1-Oct-97	0.20	0.37	165	208	236	300	229	311	326	418	5	6	7	9	96	7	8	10	13	97	7.5	7.7	4	6	0.03	0.07	17.00	31.00					
1-Nov-97	0.20	0.30	152	171	232	282	212	276	321	405	6	6	8	10	95	7	8	11	13	96	7.2	7.9	3	5	0.02	0.04	5.00	13.00					
1-Dec-97	0.18	0.30	162	190	251	298	205	250	322	392	5	6	8	11	95	5	6	8	11	97	7.2	7.8	5	15	0.02	0.05	2.00	2.00					
1-Jan-98	0.27	0.47	121	145	260	296	138	188	296	347	11	11	23	27	90	12	13	26	35	89	7.2	7.8	33	66	0.02	0.04	2.00	3.00					
1-Feb-98	0.19	0.25	155	205	257	318	181	193	304	368	8	9	13	14	93	10	12	16	20	93	7.1	7.7	15	50	0.01	0.04	2.00	2.00					
1-Mar-98	0.24	0.42	112	137	206	245	153	185	277	352	10	13	10	13	94	7	8	12	16	94	7.2	7.9	20	71	0.01	0.03	2.00	2.00					
1-Apr-98	0.20	0.34	145	222	232	317	188	258	309	368	7	9	11	17	95	6	8	13	16	95	7.2	7.6	3	6	0.01	0.04	2.00	3.00					
1-May-98	0.18	0.30	175	214	269	298	225	290	349	414	8	11	14	28	98	8	11	13	23	93	7.0	7.8	5	8	0.01	0.03	2.00	3.00					
1-Jun-98	0.17	0.20	312	459	203	271	346	383	231	265	6	8	10	12	96	6	9	9	13	96	7.4	7.8	18	28	0.01	0.03	5.00	15.00					
1-Jul-98	0.17	0.35	223	323	304	409	296	372	405	505	4	5	6	7	97	4	6	6	8	98	7.0	7.9	6	22	0.02	0.04	1.00	2.00					
1-Aug-98	0.16	0.19	295	328	378	416	257	268	330	358	5	7	6	9	98	7	8	8	10	97	7.2	7.8	14	21	0.02	0.04	1.00	2.00					
1-Sep-98	0.16	0.21	311	338	405	428	254	300	333	413	8	9	10	12	97	7	8	9	10	97	7.2	7.7	37	58	0.02	0.04	1.00	1.00					
1-Oct-98	0.17	0.21	368	398	268	306	317	360	232	277	6	8	9	10	97	7	10	10	13	96	7.4	8.0	6	11	0.02	0.04	3.00	10.00					
1-Nov-98	0.20	0.35	267	433	414	567	240	384	369	503	10	16	18	38	88	9	16	16	37	88	7.2	7.9	6	8	0.03	0.17	3.00	8.00					
1-Dec-98	0.24	0.49	210	346	422	589	186	302	372	513	8	12	16	20	84	6	7	11	13	95	7.1	7.7	6	12	0.03	0.15	2.00	5.00					
1-Jan-99	0.27	0.41	170	225	359	385	169	228	357	390	8	9	18	21	94	8	11	18	26	91	7.1	7.6	13	30	0.02	0.05	3.00	4.00					
1-Feb-99	0.28	0.62	184	226	371	448	146	173	300	374	8	10	17	22	95	6	9	13	20	93	7.2	7.8	14	28	0.01	0.04	4.00	10.00					
1-Mar-99	0.23	0.38	142	216	290	366	156	186	322	372	8	9	17	25	93	6	8	14	22	94	7.2	7.9	4	4	0.01	0.03	2.00	3.00					
1-Apr-99	0.19	0.37	317	361	202	233	298	381	191	234	6	7	10	11	96	5	7	8	11	97	6.4	7.7	3	8	0.01	0.03	2.00	2.00					
1-May-99	0.17	0.24	344	454	464	617	236	332	374	451	8	12	11	15	97	5	7	7	10	98	7.0	8.0	2	4	0.00	0.02	3.00	6.00					
1-Jun-99	0.17	0.25	373	424	261	306	325	341	228	246	7	9	11	15	96	6	10	9	16	95	7.3	8.0	9	16	0.01	0.03	4.00	10.00					
1-Jul-99	0.18	0.52	325	377	388	589	204	258	243	323	6	12	7	16	98	10	20	11	17	95	6.9	7.7	10	32	0.10	0.30	4.00	7.00					
1-Aug-99	0.16	0.32	420	570	332	420	299	478	236	352	11	14	14	19	97	8	9	9	10	97	7.6	8.0	1	2	0.50	0.85	5.00	6.00					
1-Sep-99	0.15	0.19	347	490	408	608	221	344	258	427	10																						

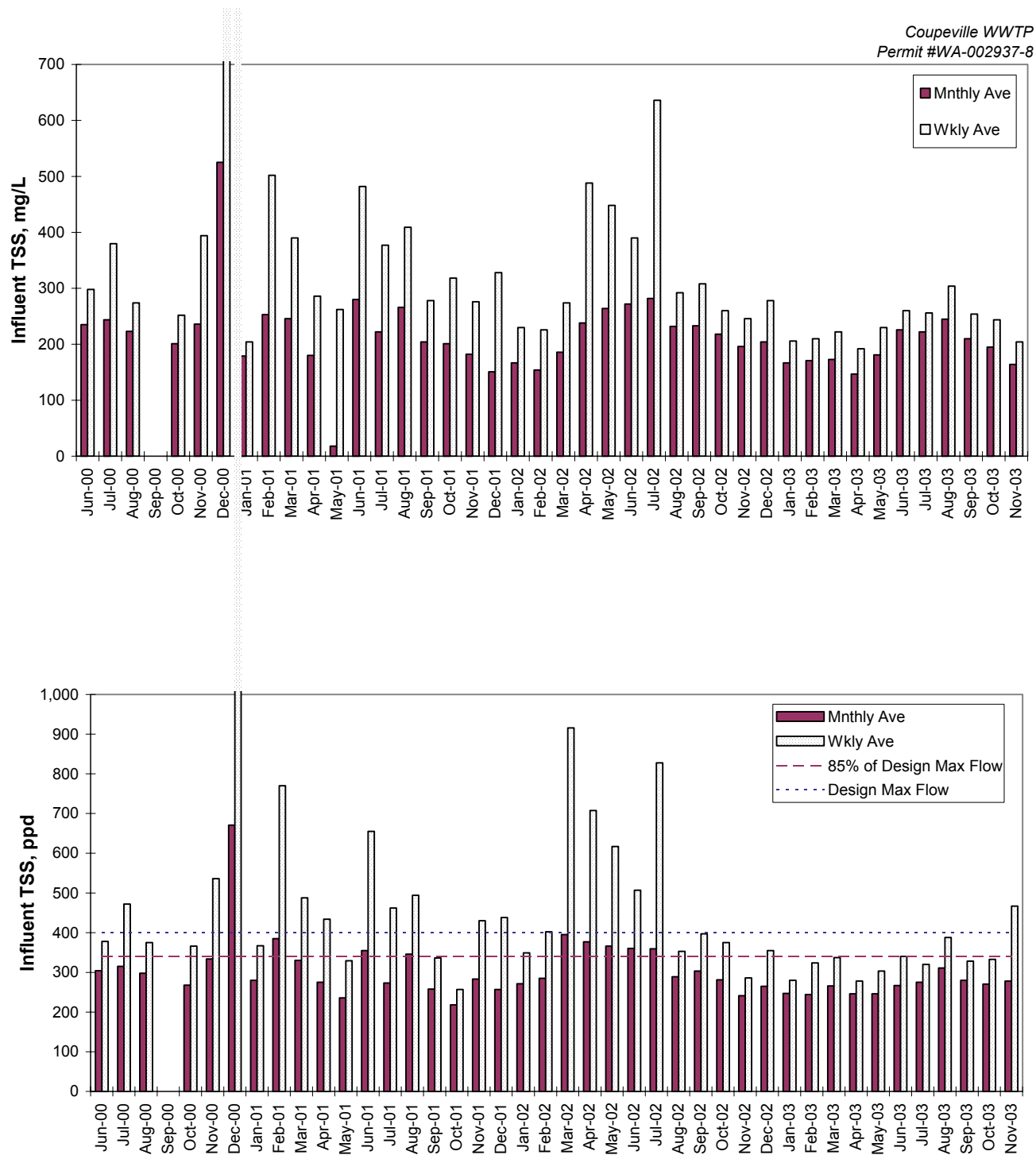
APPENDIX F — Discharge Monitoring data. 1994 – 2003 (cont'd)



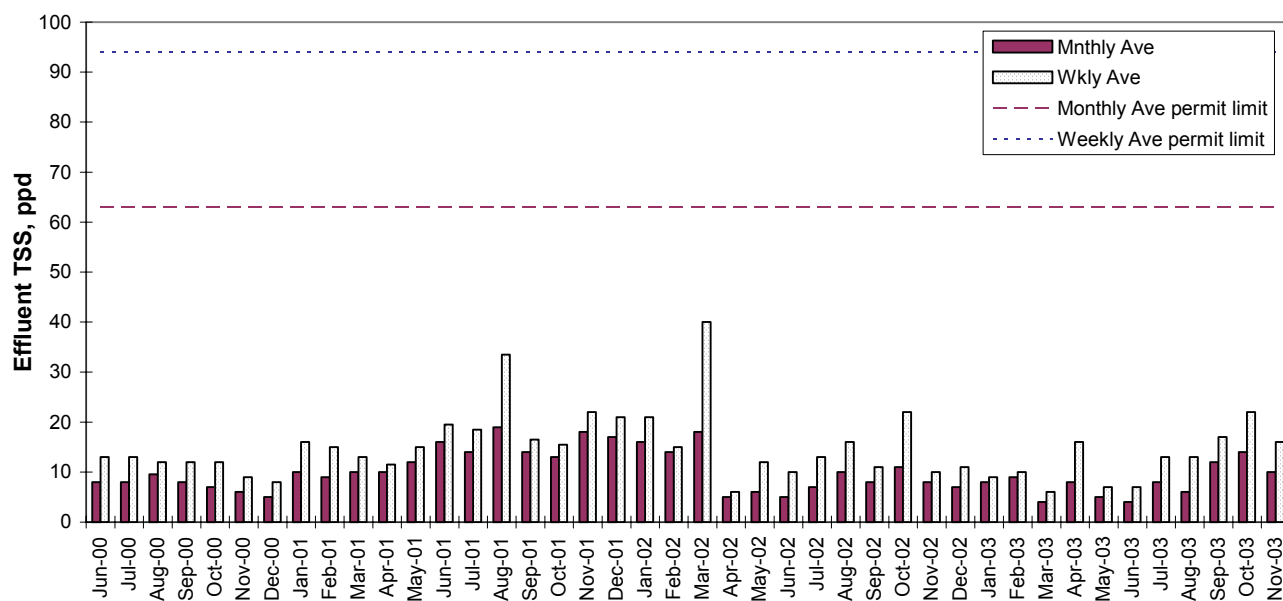
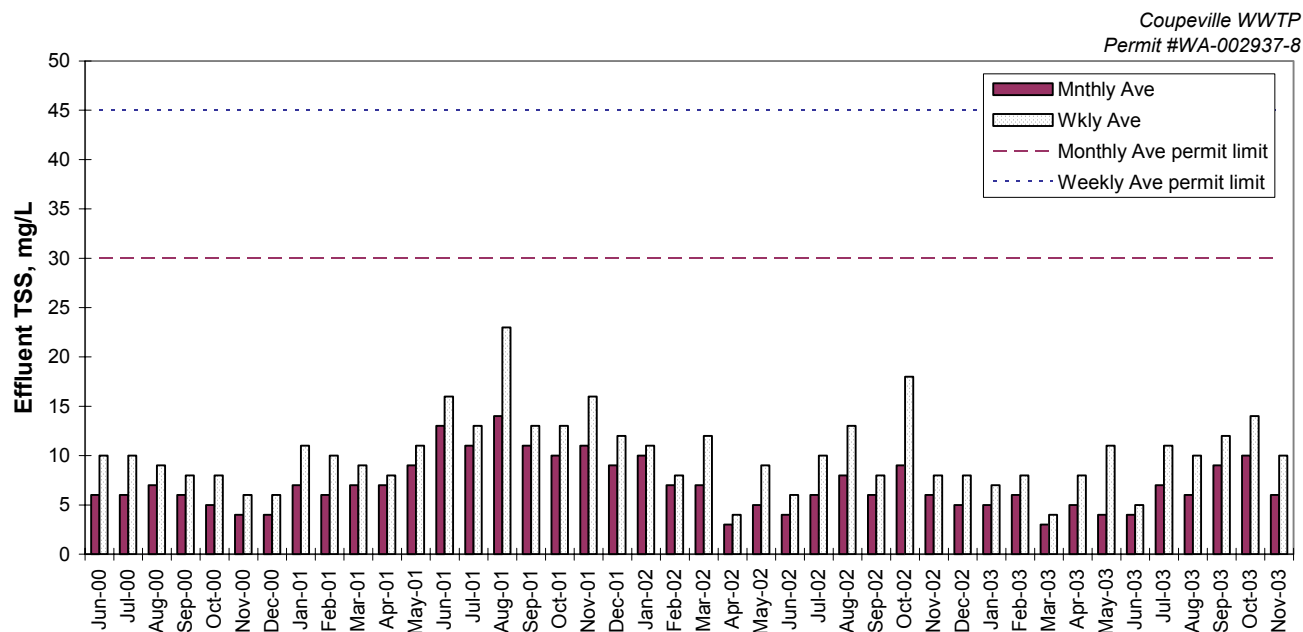
APPENDIX F — DISCHARGE MONITORING DATA. 1994 – 2003 (CONT'D)



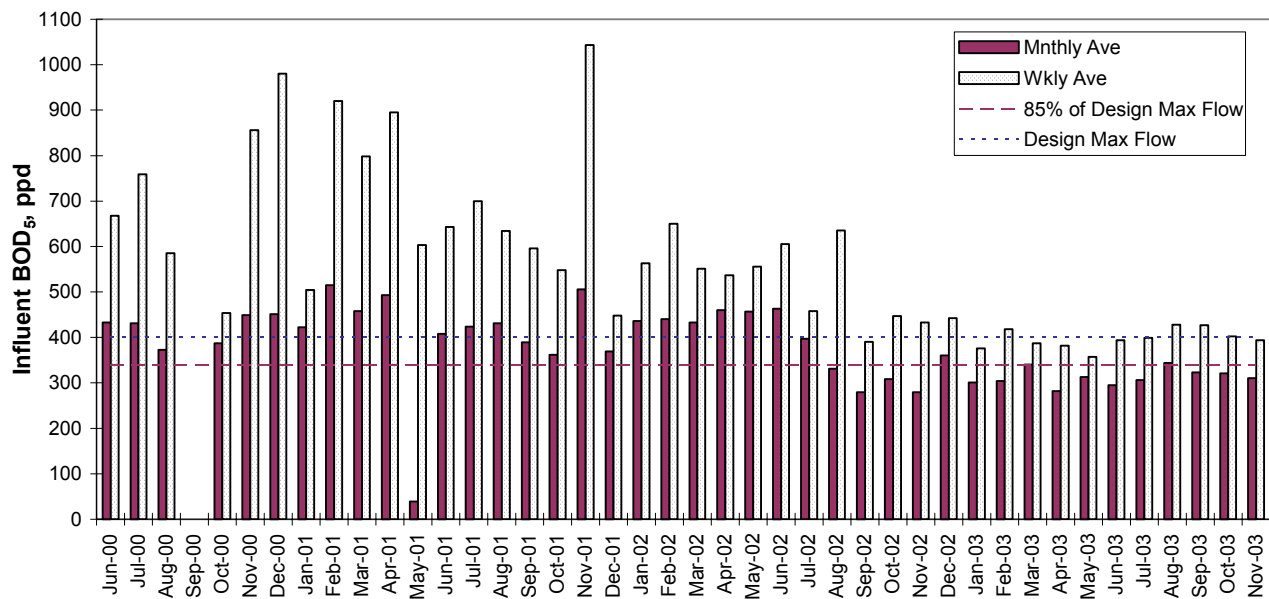
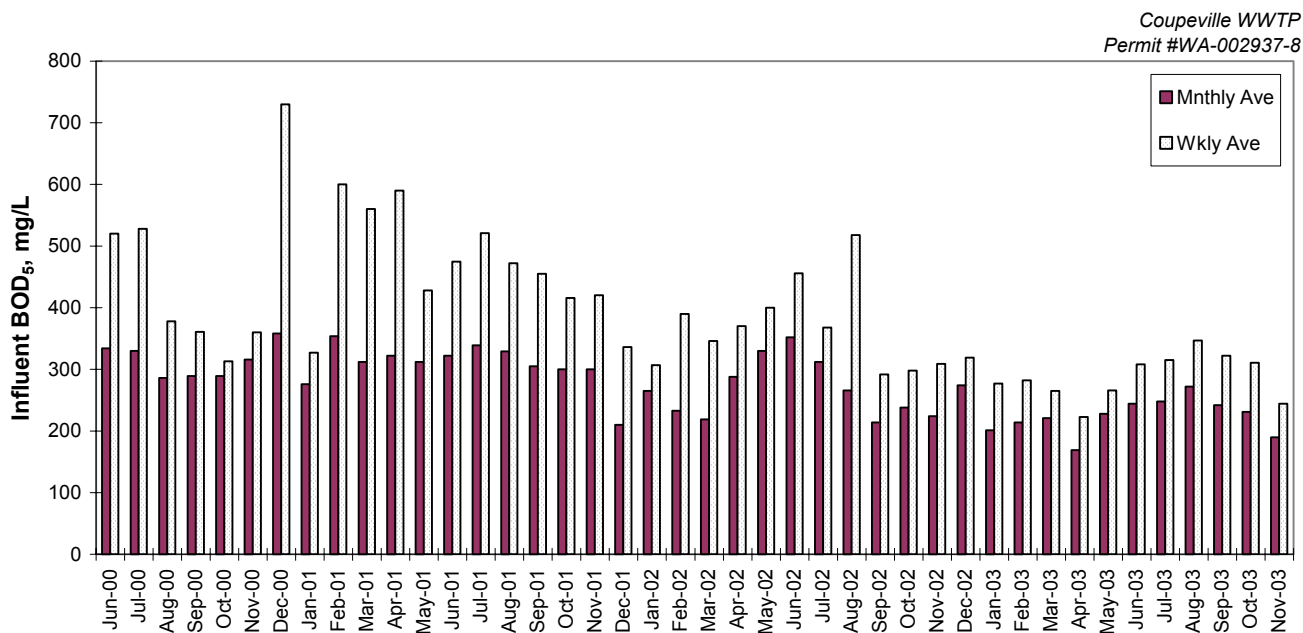
APPENDIX F — DISCHARGE MONITORING DATA. 1994 – 2003 (CONT'D)



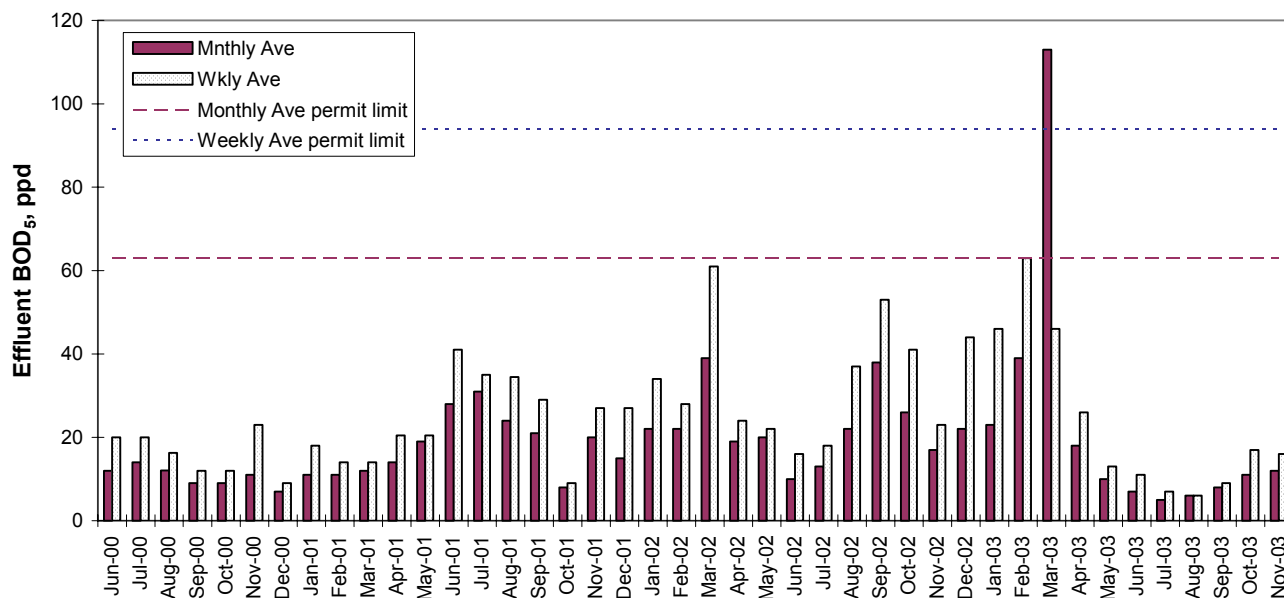
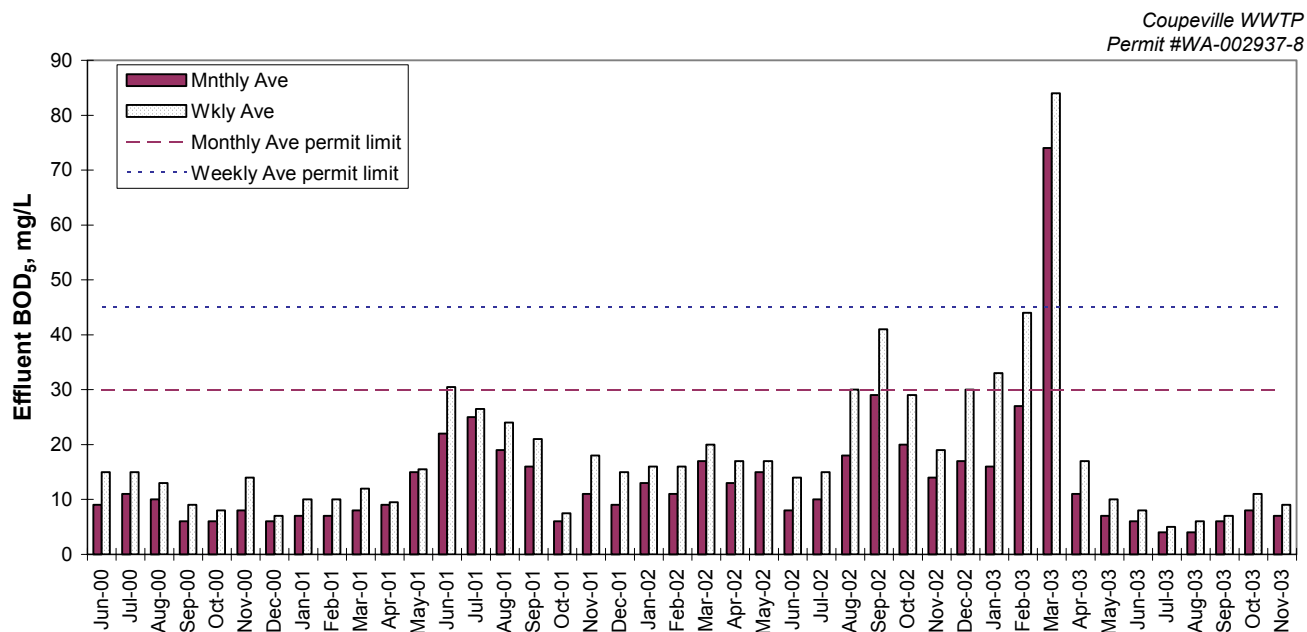
APPENDIX F — DISCHARGE MONITORING DATA. 1994 – 2003 (CONT'D)



APPENDIX F — DISCHARGE MONITORING DATA. 1994 – 2003 (CONT'D)



APPENDIX F — DISCHARGE MONITORING DATA. 1994 – 2003 (CONT'D)



APPENDIX G — AMMONIA CALCULATION SPREADSHEET

Calculation of seawater fraction of un-ionized ammonia
from Hampson (1977). Un-ionized ammonia criteria for
salt water are from EPA 440/5-88-004. Revised 19-Oct-93.

Facility: Coupeville WWTP
Permit No: WA-002937-8
Run Date: 1/30/2004

INPUT - receiving water information

1. Temperature (deg C):	14.0
2. pH:	8.3
3. Salinity (g/Kg):	15.9

OUTPUT

1. Pressure (atm; EPA criteria assumes 1 atm):	1.0
2. Molal Ionic Strength (not valid if >0.85):	0.322
3. pKa8 at 25 deg C (Whitfield model "B"):	9.282
4. Percent of Total Ammonia Present as Unionized:	4.382%
5. Unionized ammonia criteria (mg un-ionized NH ₃ per liter) from EPA 440/5-88-004	
Acute:	0.23
Chronic:	0.04
6. Total Ammonia Criteria (mg/L as NH ₃)	
Acute:	5.32
Chronic:	0.80
7. Total Ammonia Criteria (mg/L as NH ₃ -N)	
Acute:	4.37
Chronic:	0.66

APPENDIX H - REASONABLE POTENTIAL CALCULATION FOR AMMONIA

Facility: Coupeville WWTP
Permit No: WA-002937-8
Run Date: 1/30/2004

				State Water Quality		Max concentration at edge of...												
	Metal Criteria Translator as decimal	Metal Criteria Translator as decimal	Ambient Conc. (metals as dissolved)	Acute	Chronic	Acute Mixing Zone	Chronic Mixing Zone	LIMIT REQ'D?	Effluent percentile value	Max effluent conc. measured (metals as total recoverable)		Coeff Variation	# of Samples	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor		
Parameter	Acute	Chronic	ug/L	ug/L	ug/L	ug/L	ug/L		Pn	ug/L	CV	s	n					
AMMONIA unionized -see seperate spreadsheets for criteria				5,318	799		583	350	NO	0.95	0.931	16,000	0.60	0.55	42	1.09	30	50

*Insufficient data to develop criteria value. Presented is the LOEL - Lowest Observed Effect Level

This spreadsheet calculates the reasonable potential to exceed state water quality standards for a small number of samples. The procedure and calculations are done per the procedure in Technical Support Document for Water Quality-based Toxics Control, U.S. EPA, March, 1991 (EPA/505/2-90-001) on page 56. User input columns are shown with red headings.

fn: TSDCalc10.cls